Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1.   (Currently amended) A method~~Method of determining a first segmentation result of an~~ ~~object of interest in a first image of time-series images, the time-series images including the first~~ ~~image and a second image; the method~~, comprising ~~the step of~~: adapting ~~an initial mesh~~ a previous segmentation of an object in a previous image to the object in ~~the first~~ a current image, based on an energy optimization that uses the previous segmentation and a shape model for the object in the current image, to determine ~~the first~~ a current segmentation ~~result~~ for the object in the current image; ~~wherein the adaptation of the initial mesh to the object of interest is performed~~ ~~on the basis of an energy optimisation using the initial mesh and a shape model of the first~~ ~~image; wherein the initial mesh corresponds to a second segmentation result of the object of~~ ~~interest in the second image; and wherein the second image precedes the first image in the time-~~ ~~series images.~~

2.   (Currently amended) The method of claim 1, wherein the energy optimization ~~optimisation~~ further comprises ~~the steps of~~:

determining an internal energy corresponding to a first distance between the previous ~~first~~ segmentation ~~result~~ and the shape model;

determining an external energy corresponding to a second distance between the object ~~of~~ ~~interest~~ and the previous ~~first~~ segmentation ~~result~~; and

minimizing the external and internal energies.

3.   (Original) The method of claim 1, wherein the shape model is a time-dependent, three dimensional surface mesh determined from a training model.

4. (Original) The method of claim 1, wherein the object of interest is at least one of moving and deforming.

5. (Currently amended) The method of claim 1, wherein the previous ~~second~~ image immediately precedes the ~~first~~ current image in the time-series images.

6. (Currently amended) The method of claim 1, wherein the images are ~~method is a method for the automated segmentation in~~ cardiac MRI images.

7 (Currently amended) A~~Image processing~~ device, comprising:

a memory for storing a first and a second image of time-series images; and

an image processor for adapting ~~an~~ a first ~~initial~~ mesh to an object of interest in the second ~~first~~ image to determine a second ~~first~~ segmentation result; wherein the adaptation of the first ~~initial~~ mesh to the object of interest is performed on the basis of an energy optimization ~~optimisation~~ using the first ~~initial~~ mesh and a shape model of the object in the second ~~first~~ image; and wherein the first ~~initial~~ mesh corresponds to a first ~~second~~ segmentation result of the object of interest in the ~~second~~ first image; ~~and wherein the second image precedes the first image in the time-series images~~.

8. (Currently amended) A computer readable medium encoded with computer executable instructions that when executed by a computer processor cause the processor to perform the acts of:~~Computer program for an image processing device for determining a first segmentation result an object of interest in a first image of time-series images, the time-series images including the first image and a second image, wherein a processor of the image processing device executes the following step when the computer program is executed on the processor:~~

adapting ~~an~~ initial mesh for an object of interest in a first image to ~~the~~ an object in ~~the first~~ a second image to determine ~~the first~~ a second segmentation result; wherein the adaptation of the initial mesh to the object ~~of interest~~ is performed on the basis of an energy optimization ~~optimisation~~ using both the initial mesh and a shape model of the object in the ~~first~~ second image; and wherein the initial mesh corresponds to a ~~second~~ first segmentation result of the

object of interest in the ~~second~~ first image~~; and wherein the second image precedes the first image in the time-series images~~

9. (New) The method of claim 1, wherein the shape model is a 4D shape model.

10. (New) The method of claim 1, further comprising predicting a next time step in the time series based on the previous segmentation result and the shape model.

11 (New) The method of claim 1, further including at least one of rotating or scaling the previous segmentation during the adaption using a fast closed-form point based registration based on singular value decomposition.

12 (New) The method of claim 2, further comprising minimizing the energy as a function of the equality $E = E_{ext} + \alpha\ E_{int}$, where E_{ext} is the external energy, E_{int} is the internal energy, and α is a predetermined weight corresponding to a relative influence between the external and internal energies.

13. (New) The device of claim 7, wherein the image processor determines an energy corresponding to a distance between the first mesh and the shape model.

14. (New) The device of claim 13, wherein the image processor adapts the first mesh by minimizing the energy.

15. (New) The device of claim 7, wherein the image processor generates the first mesh based on the first image and a shape model of the object in the first image.

16. (New) The device of claim 7, wherein the first mesh includes *a priori* time varying shape information about the object in the second image.

17. (New) The device of claim 7, wherein the first mesh includes patient-specific image data

18. (New) The computer readable medium of claim 8, further encoded with computer executable instruction that when executed by the computer processor cause the processor to perform the acts of:

determining an energy corresponding to a distance between the first segmentation result and the shape model; and

minimizing the energy to adapt the first segmentation result and the shape model to the object in the second image

19. (New) The computer readable medium of claim 8, further encoded with computer executable instruction that when executed by the computer processor cause the processor to perform the act of: generating the first segmentation result based on the first image and a shape model of the object in the first image.

20 (New) The computer readable medium of claim 8, wherein the first segmentation result includes *a priori* time varying shape information about the object in the second image and patient-specific image data